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**PRINCIPAL MODEL OF NATURE DEVELOPMENT AND THE LAWS  
OF HER ENTROPY BEING  
ПРИНЦИПОВА МОДЕЛЬ РОЗВИТКУ ПРИРОДИ І ЗАКОНИ ЇЇ  
ЕНТРОПІЙНОГО БУТТЯ**

***Summary.** The article presents a model of nature development that aims to enhance researchers' ability to generalize vast amounts of data, enabling a more accurate assessment of the evolutionary-historical events of scientific investigations. It discusses the entropic interaction characteristics of the environment and the body based on the interactions of energy and information. The model addresses the systematic crises resulting from the imbalance between energy-informatic entropy and the system's ability to master them. These lead to the formation of a new memory type or the degradation and death of the object.*

*Additionally, the model introduces and discusses the entropy model of memory evolution and the principles of reflex development. These principles determine the systemic interaction of objects with the external entropy of the*

*environment. Additionally, it formulates new laws of natural interactions related to the energetical and informatic entropy of events.*

*The article also discusses the evolutionary model of the reflex memory organization of objects and the principles of their division into "vivid" and "dead" systems. The last concepts are based on the dominant direction of interaction between the body and the environment.*

**Keys words:** *emission and absorption, entropy, energy, information, laws of entropy, macrocosms and microcosms, vivid and dead objects, principles of reflection, symmetry and asymmetry. systematic crises of memory.*

**Анотація.** *У статті представлено модель розвитку природи, спрямовану на підвищення здатності дослідників узагальнювати величезні масиви даних, що дозволяє точніше оцінювати еволюційно-історичні події наукових досліджень. У ньому обговорюються характеристики ентропійної взаємодії середовища та тіла на основі взаємодії енергії та інформації. Модель також розглядає систематичні кризи, що є наслідком дисбалансу між енерго-інформаційною ентропією і здатністю системи долати їх, що призводить до формування нових типів пам'яті або деградації та смерті об'єкта.*

*Дана модель представляє та обговорює ентропійну модель еволюції пам'яті живих організмів і принципи розвитку рефлексів, які визначають системну взаємодію об'єктів із зовнішньою ентропією середовища. Крім того, вона формулює оновлені закони природних взаємодій, пов'язаних з енергетичною та інформаційною ентропією подій.*

*У статті також розглядається еволюційна модель рефлекторної організації пам'яті різних об'єктів та принципи поділу на «живі» та «мертві» системи. Це визначається домінуючою спрямованістю взаємодії організму та середовища.*

**Ключові слова:** випромінювання та поглинання, ентропія, енергія, інформація, живі та мертві об'єкти, закони ентропії, макрокосмос і мікркосмос, принципи відображення, симетрія і асиметрія, системні кризи пам'яті.

**Introduction.** The main task of this model is to develop the ability of the enormous volume's generalization of scientific Data. That allows researchers to bring the height of their thinking closer to a real assessment of the evolutionary-historical Events of different investigations of humankind's existence. The study of this "arsenal" of philosophical Concepts and Their multifaceted meanings, which will be described here, will not add "genius" or "talents". But it will allow better to navigate the everyday life of mass "viability". The efforts spent on meaningful understanding, agreement, or contradiction with what is being stated, will only be beneficial for strengthening personal views on the World.

*"The simpler are prerequisites, the more various the phenomena they link, the more extensive is the area of their application, the more impressive is the THEORY ..."* (Albert Einstein)

The article concludes by discussing the need to form new degrees of organization of memory, which will determine the future fate of Earthly Civilization. It also addresses the debate surrounding the division of nature into "vivid" and "dead" states, emphasizing the challenges in defining the boundaries and principal influence of these concepts.

The principal model of nature development provides a thought-provoking exploration of different systems' evolutionary processes and organization. It offers insights into the complex interplay between energy, information, and their systemic entropy.

## **1. EMISSION AND ABSORPTION or Basic Characteristics of Movement**

Any MOVEMENT presupposes the presence of ITS Source and the Sphere of Influence of the properties distributed by IT. The physical categories "RADIATION" and "ABSORPTION" are excellent for describing the work of Their interactions. "THESE CONCEPTS" easily describe the All-Encompassing PRINCIPLE OF REFLECTION.

In an expanded understanding, RADIATION is a formed and directed Movement of matter, which has an extremely heterogeneous distribution density of the diverse forms of Its existence. Therefore, it's plausible to conclude that the DIRECTION of arbitrary Radiations is determined not only by the characteristics of Their sources but also by the resistance of the Medium of Their propagation. The resistance of the Medium is determined by the processes of RE-EMISSION and ABSORPTION of the characteristics of the influencing RADIATION that are present in It.

THESE TWO processes cannot exist in a single state, because, in "ideal independence", THEY can bring Death to any Movement. In the first case: "COMPLETE RE-EMISSION" leads to self-destruction of the influences of the Source. (Here the principle of physical understanding of the "Absolutely White Body" is used.) And in the second: "COMPLETE ABSORPTION" leads to a destructive depletion of the Source Itself. (The "Absolute Black Body" principle is used here.)

In other words, the FIRST OPTION destroys the consequences of Radiation (i.e., the Environment of Its influences), and the SECOND OPTION destroys the Cause of Their occurrence.

The real ABSORPTION of arbitrary Radiations is characterized by a certain degree of "resistance" to the Sphere of Their Influence. Therefore, the integrity of the Radiant Flow is divided into ABSORBED and RE-EMISSIONED parts.

Thus, it turns out that REFLECTION is the result of the work of "Obstacles" (Environmental Objects) to RE-EMISSION and ABSORPTION of

the Impacts perceived by "Them". IT leads to changes in the natural states of the Environment due to the energy-informational properties of the influencing Radiations. This determines the nature of the TRACES left in Her. This process is the true concept of REFLECTION of Radiation Sources. Based on it, let's give a new definition of Memory.

***MEMORY is the ability of an Object to REFLECT (in the sense: of accumulating in Itself) RESULTS of exposure to arbitrary RADIATIONS from the ENVIRONMENT of His existence.***

## **2. SYMMETRY AND ASYMMETRY or quirks of Reflection Processes**

Taking into account the above reasoning, let's try to give an assessment and the necessary definitions to the modern understanding of the Principles of SYMMETRICAL and ASYMMETRICAL REFLECTION because thanks to THESE PROCESSES the Evolution of the World is carried out.

***"SYMMETRY / in Greek - proportionality / - in a broad sense, the invariance (immutability) of a material object relative to its transformations (i.e. changes in many physical conditions). SYMMETRY IS THE BASIS OF THE LAWS OF CONSERVATION."***

Let's take Absolute / in Latin. - unlimited / Ideal of physical Reflection. It can be of two types: SYMMETRICAL (non-reversing, like a mirror lens) and ASYMMETRICAL (reversing, like a concave lens). Then, for an accurate understanding of the absolute idealization of RE-RADIATION processes, we have in the FIRST VIEW - Complete absence of perception in the "irradiated" Objects, i.e. Their "Unshakable Peace", which means "Death of Movement in Objects" or "Its Invisibility" for influencing Radiations. AND SECONDLY - Complete self-destruction of any influences on the Object, due to Its reflective abilities to create "Anti-Radiation", which leads to the "Death of Movement outside Objects".

For the absolute idealization of ABSORPTION processes in the SYMMETRY principle, there is a "Complete depletion of Radiation Sources" (due to the Unobstructed Medium of Their Propagation); the absence of the RE-EMISSION process in Objects and the endless area of influence of these Radiations. This leads to the "Death of the Sources of Motion". In the ASYMMETRICAL Principle of ABSORPTION, there is only an antiphase reversal of the "Radiant Streams" with the same Infinity of the sphere of "Their" influence, i.e. Complete sameness of Environmental Objects, which would lead to the "Death of the Evolution of Natural Movements".

SUCH conditional "ABSOLUTES" plunge Us into the horrors of the "Worldwide End of the World". But fortunately, "THEY" are rare in our Galaxy. That is why we need to understand the MEASURES OF THE DOMINATING EFFECT OF THE GIVEN PRINCIPLES OF REFLECTION, i.e. in the intermediate phases of SYMMETRY OF REFLECTIONS.

From a philosophical point of view, THESE MEASURES are considered special forms of objectified Systems organization; functions, and structures, which are determined by the corresponding DOMINANCE OF SYMMETRICITY or ASYMMETRICITY of their simultaneous work. The way of perceiving the main influences of the Environment, determined by the clarified ratio of ANY PREMIUM, characterizes the degree of development of the System.

In the course of Natural Evolution, there is a tendency to maintain the SYMMETRICITY of the structural composition of Objects with a gradual transition of Their working existence from the SYMMETRICAL principle of functioning to the predominance of the organizing role of the ASYMMETRIC principle. We will not consider the issues of the action of different-phase shifts of symmetric transformations and their consequences in the life of objects here. Do you want to understand this sense deeply? D'better, learn the textbooks about crystallography and the biology of plants.

Applying all of the above to Human Knowledge of the World, let's formulate the RULE OF ORGANIC MEMORIZATION:

***Conscious reproduction of the Event SUM OF ABSORBED AND RE-EMISSIONED (by the Object) PARTS of the influencing array of RADIATIONS provides the "ORIGINAL" of truly accessible Information about a given Object, which is ultimately determined by the organic capabilities of the knower.***

This rule states that in any Organism the condition of simultaneous operation of the Principles of STRUCTURAL SYMMETRY and FUNCTIONAL ASYMMETRY of the Reflective Abilities of Memory can and must be fulfilled. This is exactly how the true nature of Our Mind is structured.

Using SUCH PROCESSING of Old and New Events will greatly expand the cognitive limits of Human Consciousness!

### **3. MACROCOSMOS AND MICROCOSMOS or the General Interrelation of Natural Objects**

Following the ancient Greek philosophy, the word "COSMOS" is used to designate the World of the Universe, as an evolutionarily organized Whole, as the level of generalized Knowledge about the power of Natural Movements. It is "HE" that defines the boundless boundaries of the "struggle" of modern Knowledge with the growing Chaoticity of the habitat of Our Mind. One time, for the same great purpose, ancient philosophers formulated such concepts as MACROCOSMOS / in Greek. - Big World / and MICROCOSMOS / in Greek. - Small World/. THEY, "asymmetrically" opposed and "symmetrically" personified the UNIVERSE and HUMANKIND.

Of course, this idea is fascinating, and therefore let's remember the Basis of Nature's Development: the PRINCIPLE OF EVOLUTIONARY REFLECTION. IT, naturally, includes in ITSELF the reception and transmission of Information and Energies, through which the Entropy of Its external and internal States is transformed in the Object. If proceed from the Law of Conservation of Energy

and Information, then the first impact perceived by the System (initial Reflection) triggers a whole chain of Transformations (Re-Reflections) according to the scheme: SOURCE - CONSUMER. The results of the action of a sequential series of These processes determine the dynamic states of MEMORY of the objectified Systems, which is expressed by the resulting "reordering of the organization" of Their existence.

CHAINS of the described "Reincarnations" can independently develop in TWO global directions of Their "Own" material state:

*to INCREASE THE SIZE of the Consumer of Information Flows of "Radiant" Energy, i.e. the phenomenon of PREDOMINATING ABSORPTION;*

*or by their DECREASE, i.e. phenomenon of PREDOMINATING RE-IMANATION.*

For Objects of large volume. In the FIRST case, it is difficult to increase the orderliness of the absorbed Entropy, which determines the low levels of Organization of Their existence. They are very limited in the quality (Informativeness) of Their Reflections, but quantitatively they are powerful in accumulating the Energy properties of any influence. The reserve of "endurance" for mastering homogeneous Information for such Bodies amazes the human imagination. The presence of the Object's MEMORY with a GIVEN DIRECTION OF REFLECTIONS leads to MACRONIZATION of Their Bodies. Those, to a process that, while preserving the basic properties of the previous state, cannot ensure the systematic development of Radiations of an informationally different kind ("unusual to them"). And the Information-massive impact of "foreign" Energies leads a System of SUCH "CLASS" to Destruction!

In the SECOND case, the limited volume of the material composition of the Consumer leads to its MICRONIZATION. The process that while preserving the evolutionary-possible Properties of the previous State of His Body, gives Him great "chances" for useful interaction with other systems of "foreign"



Information. As a result, the probability of increasing the degree of organization of the memory of such Objects sharply increases. This statement does not mean that the smaller the Object, the higher the perfection of the system of Its reflections. We are talking only about the Opportunities to have contacts with Radiations of different information content, but always energetically suitable for perception. It's real because the energetically massive impact of "foreign" Information leads the System of THIS "CLASS" to Destruction!

From the above-described reasoning, we can draw an intermediate conclusion that the Degree of Organization of Objects depends on the GLOBAL DIRECTION of the results of the work of the PREMINARY PROCESSES in It, as well as on the SPHERE OF INFORMATION-ENERGY INFLUENCE of Its ENTROPY. From this follows several interesting principles of the "Evolutionary Life" of Nature:

#### THE PRINCIPLE OF REFLEX DEVELOPMENTS

*This is the definition of the RESULTING PATH of the Systemic interaction of arbitrary Objects with the Natural Entropy of the Environment of their integral existence. THIS PATH leads to MACRONIZATION or MICRONIZATION of the Information-Energetic properties of the Memory of these Objects.*

#### THE PRINCIPLE OF REAL SPHERICITY OF REFLEX ACTIONS

*This is the definition of the SPHERE OF INFLUENCE of the Information-Energetic properties of the Memory of arbitrary Objects in the Natural Entropy of the Environment of Their integral existence, WHICH either Expands or Narrows.*

#### THE PRINCIPLE OF EVOLUTION FOR "VIVID" OBJECTS

*This is when the concept of MACROCOSMOS corresponds to PERIODICALLY CHANGING STATES OF A SYSTEM OF BODIES with a "low" Organization of the evolutionary processes of formation of the Universe.*

*The concept of MICROCOSMOSE corresponds to STAGED DEVELOPING STATES OF A SYSTEM OF BODIES with a "high" Organization of the evolutionary processes of the formation of the Universe. THEY are determined by the general interaction of SYSTEM Objects through Their ability to sustainably Reflect the free manifestations of the Entropic Environment of THEIR existence.*

PRINCIPLE OF PRESERVING ANALOGIES IN REFLECTION DEAL  
*IN THE MACROCOSMOS one can find the FUNDAMENTAL REGULARITIES of the life activity of the MICROCOSMOS, which is determined by the Evolutionary-General sequence of development of the Memory of arbitrary Objects and is strictly limited by the Time of their existence!*

#### **4. INFORMATION AND ENERGY or the Multifaceted Entropy of Nature**

At the end of the 20th century, such sciences as the little-known "Energy Entropics" and the rather popular "Informatics" emerged from the field of Natural Science. The first, to describe various processes of Nature and Technology, fundamentally operates with the concepts of "energy" and "entropy"; and the Second - is the concepts of "information" and "entropy". "They both" rightly, but unfortunately separately, unfold the spheres of distribution of THEIR laws and postulates to the Whole World of "Life" and "Death". ENERGYENTROPICS tries, through "thermodynamic" generalizations, to idealize the "Cosmic-primordial" characteristics of natural Phenomena and is inclined to a predominantly physical interpretation of the picture of Universal processes. And INFORMATION SCIENCE through "digitalization" - to the predominantly social application of the same process, but from the idealized heights of the "Miraculous Order" of World Laws.

For some reason, modern-educated people trust more in explaining unknown phenomena from the Energy and Information positions of Human

Knowledge than in philosophical "fairy tales" about the "high matter" of Reflection processes. This situation is justified apparently by the great possibilities of practical application of these sciences. But at the same time, the philosophical and fundamental equivalence of the concepts of "Entropy" (in Greek) used by Them escapes attention. - contained in Transformations/. Also, the similarity of mathematical means of explaining the Laws of the Data Sciences remains without due attention.

Let's solve the compatibility problem between ENERGY ENTROPICS and INFORMATION SCIENCE by defining the "Meaning load" of the main Categories of these Knowledge systems. First, let's present individual new formulations of the Concepts used [2].

***ENERGY is a General, cognitively-Scalar (i.e., independent of Directions) MEASURE OF HOMOGENEOUS MOVEMENTS in Time and Space; - quantitative characteristics of the performance of the processes of Systemically Organized Reflection in the Habitat of Objects.***

***INFORMATION is a General, cognitive-Vector (i.e., depending on Directions) MEASURE OF ORDERS OF MOVEMENTS in Time and Space; - qualitative characteristics of the performance of the processes of Systemically Organized Reflection in the Habitat of Objects.***

***ENERGY ENTROPY is a MEASURE OF UNCERTAINTY IN THE DISPERSION OF ENERGIES, THEIR "shadow", the meaning of "which" is that the more energy losses during the Systemic processing of the influencing radiations of the Environment, the faster increases the AMOUNTS OF MOVEMENT HETEROGENEITY in given System.***

***INFORMATION ENTROPY is a MEASURE OF UNCERTAINTY IN THE DISTRIBUTION OF INFORMATIONS, THEIRS "shadow", the meaning of "which" is that the more information lost during the Systemic processing of the influencing Radiations of the Environment, the sooner increases the NUMBER OF DISORDERLY MOVEMENTS in given System.***

Summarizing the last two definitions, reasonably to propose:

***The category ENTROPY should be understood as a CONSCIOUSNESS MEASURE of UNCERTAINTY in the DISPERSION and DISTRIBUTION of SYSTEM NATURE MOVEMENTS; those, as a MEASURE OF UNCERTAINTY LOSSES OF HETEROGENEOUS (Energetic) and DISORDERED (Information) Movement of arbitrary Radiations in any process of Their REFLECTION by an object of cognition.***

For further discussion, it is THESE semantic loads of the global concepts of Energy, Information, and Their common ENTROPY that will be used. In this case, the Information or Energy characteristics of the LAST ONE will be determined in strict dependence on the DOMINANCE of the Analyzing or Synthesizing orientation of researchers' cognition.

***The ENTROPY assessment of Energetic characteristics of the cognizable Object will determine the DOMINANT-ANALYZING actions of researchers; and the DOMINANT-SYNTHESIZING actions - by the ENTROPY assessment of Information characteristics of the researching's Object.***

Based on the above-defined CONCEPTS, let's formulate new LAWS OF NATURE that do not contradict the well-known laws of Energy Entropics and Informatics:

1. THE LAW OF SYSTEMS REFLECTION or TRANSFORMATION OF ENERGIES AND INFORMATION OF NATURAL ENTROPY  
***NO SYSTEM of REFLECTION processes can exist without the Reception-Transmission of ENERGIES and INFORMATION of the mastered ENTROPY of Natural Interactions. THIS is the Source of changes and preservation of the REFLECTIVE CAPABILITIES of any Natural OBJECT.***

2. THE LAW OF INCREASE IN ENTROPY OF CLOSED SYSTEMS or LOSS OF ENERGY AND INFORMATION  
***The ENTROPY of a CLOSED for External Influences REFLECTION SYSTEM tends to DECREASE the ORDER of ITS ORGANIZATION due to***

**the INTRASYSTEM LOSS of HOMOGENEOUS of its inherent MOVEMENTS.**

3. THE LAW OF DECREASING ENTROPY OF OPEN SYSTEMS or THE GROWTH OF THEIR ENERGIES AND INFORMATION  
***ENTROPY of an OPEN SYSTEM of REFLECTIONS strives to INCREASE the internal ORDER of ITS ORGANIZATION due to mastering the HETEROGENEITY of extra-system influences and spreading OWN NEW HOMOGENEOUS MOVEMENTS.***

4. THE LAW OF LIMIT DEVELOPMENT OF SYSTEMS or THE STAGES OF ENERGY AND INFORMATION EVOLUTION  
***Any SYSTEM of NATURAL REFLECTIONS REACHES evolutionally determined LIMITS in OWN ORDER of the HOMOGENEOUS MOVEMENTS of mastered ENTROPY.***

5. THE LAW OF PREDOMINANT DEVELOPMENT OF SYSTEMS or EVOLUTIONARY COMPETITION OF MASTERING THE INFORMATIONAL AND ENERGETIC ENTROPY  
***Among the different SYSTEMS OF NATURAL REFLECTIONS, PREDOMINANT DEVELOPMENT is the ONE, WHICH under HOMOGENEOUS CONDITIONS of EXISTENCE, achieves the HIGHEST DEGREE OF ORDER in the MOVEMENTS of spreading OWNLY mastered ENTROPY.***

According to these laws, the MEMORY OF AN OBJECT determines the stable states of the processes of Systemic Reflection of the Energies and Information of the Entropic events processed by the Object in the spheres of ITS existence.

**5. PROGRESS AND REGRESS or Alternatives for Life Development**  
[2]

Let's start with the position that the Evolution of Natural Objects has FUNDAMENTALLY THE SAME STAGES OF Its DEVELOPMENT: from the

“Non-Intelligent” elementary processes of the formation of Star Galaxies to the highest Organization of the Mind of future generations! An explanation of this statement is below. (See Fig. 1 and Fig. 2)

**5.1.** The evolving ENTROPY (as a universal measure of the “disorder” of the unknown heterogeneity of the distribution of material Movements) be determined by the infinite volume of Space, which includes All systems of Natural interactions (including the Human Mind that cognizes IT).

**5.1.1.** Let’s divide what is presented in half with an imaginary (figuratively horizontal) plane (it doesn’t matter where the border is, the main thing is that it takes place). Thus, one half represents the MACROCOSMOS and the other - the MICROCOSMOS. Simply put: the first is the EXTERNAL ENVIRONMENT, and the second is the BODY.

**5.1.2.** Further, let’s try to divide the same Space of evolving ENTROPY with a vertical plane into “quarters” and get: Environment - “in half” and Body - “in half”. This division conditionally breaks down the ENTROPY Characteristics of the System under consideration into CONSUMPTION and PRODUCTION of Information and Energy. Each “quarter”, according to its “own” purpose in the model, will reflect the processes: PREDOMINATING EMISSION or PREDOMINATING ABSORPTION.

**5.1.3.** According to the LAW OF INFORMATION AND ENERGY TRANSFORMATION, any Space cannot be “Entropy-empty”. The Environment and the Body have their own “orderliness” and “heterogeneity”.

Generally, the semantic load of the Energy concepts and Information determines the dynamic /in Greek. - strength/of Entropic characteristics of natural Movements. But there is a necessity to know Their statics /in Greek. - standing/ for understanding the process of Systemic Transformations in summarizing. The static helps to express the concept of ENTROPY more understandably. Dynamic and Static allow to intensify the speed of conscious thinking to useful cooperation

in the Cognition of the Natural relationships between the Micro and Macro Cosmos.

**5.2.** For the proposed "model" there are FOUR keys POINTS in the System: "Source-Consumer":

- 1) environmental influences; 2) consumption by the Body;**
- 3) influence of the Body; 4) consumption by the Environment.**

Let the Body perceive some indefinite orderliness or heterogeneity of the influences of the external environment, i.e. ENTROPY of Its States. But according to the LAW OF LIMITED DEVELOPMENT OF SYSTEMS, perception cannot be carried out continuously, because degradation or destruction of the Body will occur. Therefore, this process has a certain limit, which can be described approximately by a logarithmic dependence.

$$H = \text{LOG } s(t)$$

Where: "**H**" is the entropy of non-destructive (for perception by Body) influences of the External Environment;

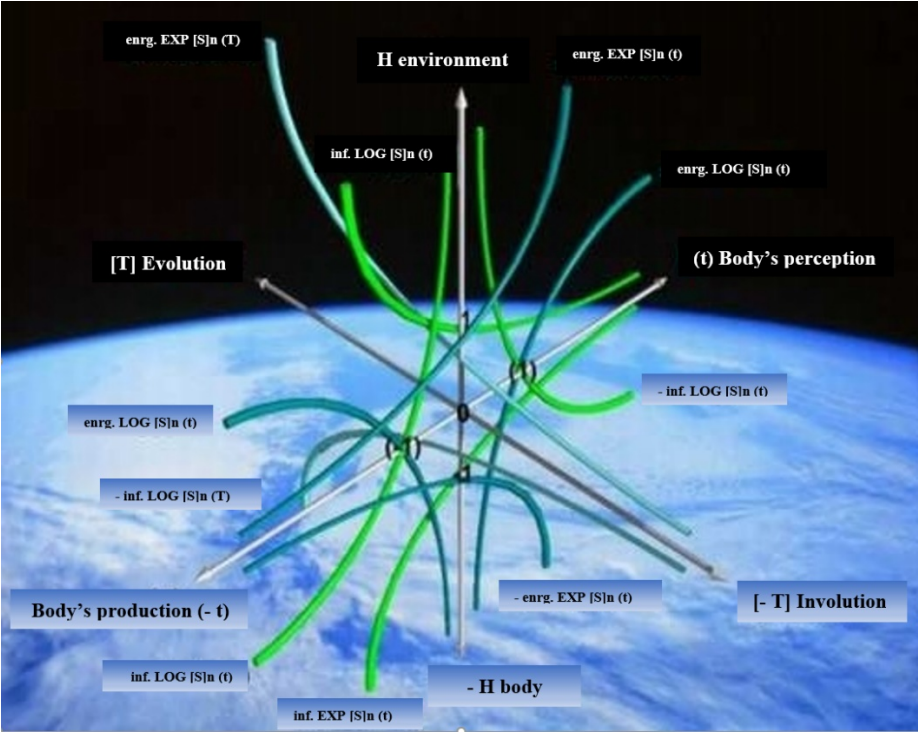
"**t**" is the lifetime of a certain Perception System, i.e. usually the Body's time of being;

"**s**" is the degree of organization of this System, which is determined by the stage of the Evolutionary development of the Body's Memory located in a given Environment.

$$[S]n = \text{LIM } [S]n-1 ([T]n \text{ evol.})$$

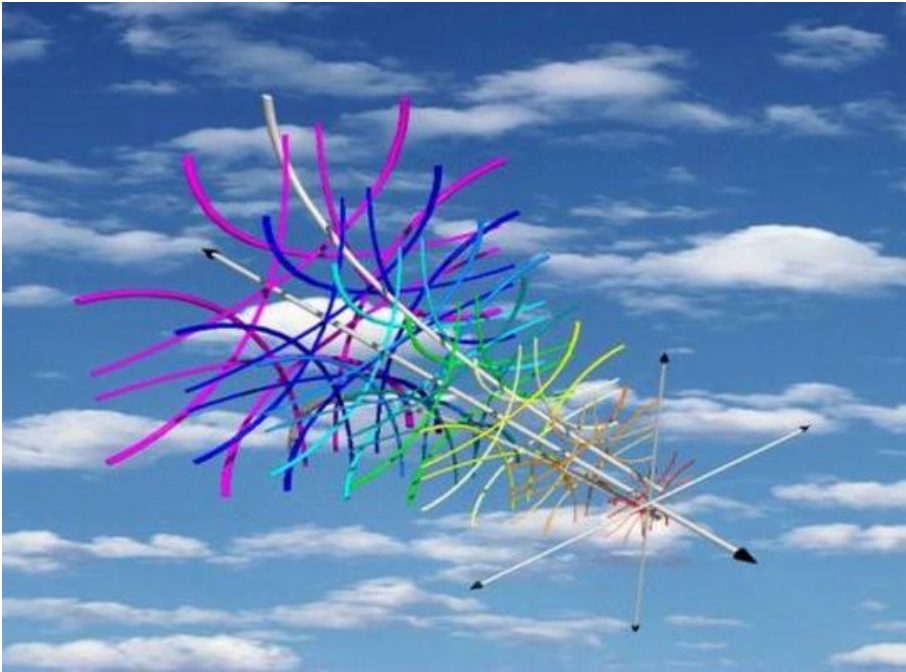
Where: "**[T]n evol.**" is the evolutionary period spent by Nature to achieve a given "**n**" degree of organization of the System relative to Its previous stage "**n-1**";

"**n**" is the serial number of the degree of organization of Entropy Reflections relative to Their Evolutionary Sequence. For vivid Organisms  $n=\{1,2,3,4,5,6,7,8,9\}$  [2]



**Fig. 1. Entropy interactions of the body and environment**

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**Fig. 2. Entropy model of Memory evolution of vivid organisms**

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**5.2.1.** ENTROPY of system interactions has two characteristics: "Information" and "Energy". This means that the "logarithmic graph" must cover both the "Measure of Energy Dissipation" of the process under consideration and the corresponding "Measure of Information Uncertainty" of the Events occurring in it. Logarithmic patterns allow us to present the "data" about the work of PERCEPTION in the following form: (See Fig. 1).

$$1) \text{ enrg.H body} = \text{LOG } [S]n(t);$$

$$\text{for } (t > 0) \text{ and } ([S]n \text{ body} > "1" \text{ ENVIRONMENT } (n-1) )$$

$$\text{LIM enrg.H body } ( Sn(t) ) = \text{"plus"-infinity};$$

Provided that the "lifetime" of the System is always greater than "zero"; and also provided that the MAIN degree of the Body's Organization is greater than the evolutionary degree of organization of the studied System of interactions. That is, the evolutionarily used "Unit" of energy-information processing of perceived Entropy is "more voluminous" (in terms of the degree of generalization of inhomogeneities) than the Systemic "unit" of processed influences of external Entropy.

This characteristic grows monotonically from "minus"-infinity to "plus"-infinity of the Entropy "volume" of the process under consideration.

$$2) \text{ inf.H body} = \text{LOG } [S]n(t);$$

$$\text{for } (t > 0) \text{ and } (0 < [S]n \text{ bodies} < "1" \text{ ENVIRONMENT } (n) )$$

$$\text{LIM inf.H body } ( Sn(t) ) = \text{"minus"- infinity};$$

Provided that the LEADING "Unit" of the Body's reflectivity is less than the information-energy degree of the System Entropy of reflections. (See Fig. 1)

Here there is a smooth drop in the characteristics of informational Entropy from "plus"-infinity to "minus-infinity" of its numerical values. This graph shows the definition and development of a certain Orderliness of the Entropy influences of the Environment.

The concept of "negative" and "positive" ENTROPY should be considered as the ENTROPY of the "Body" and "Environment", respectively! Reflection of

the Information and Energy characteristics of the influencing ENROPY is a bodily modeling of the orderliness and heterogeneity of ITS states!

The demonstrated asymmetry of Energy and Information characteristics in the process of Bodily perception is due to the identification of meaningful Measures of the quantitative and qualitative utility of the permissible growth of System Entropy.

**5.2.2.** Let's turn the explanation to distinctive features of the Environment.

The Entropy states of the Environment can be expressed in the following formulas:

1). *inf. H envir.* = **EXP [S]n (t)**;

**at (t > 0) and ( [S]n environment > "1" BODY (n) )**

*Under the general condition that the "lifetime" of the System (t) and the "unit" degree of Its organization ([S]n) are greater than "zero" (otherwise - complete Rest, "Death of Movements");*

*and also provided that the "unit" degree of organization of the System is greater than the "Unit" of the LEADING organization of the Body. (See Fig. 1)*

*Information Entropy grows from "zero" to "plus"-infinity, i.e. the scale of the Heterogeneity of the External World that the Human Mind encounters is increasing. That leads to a frightening increase in Its Uncertainty.*

2). *enrg.H envir.* = **EXP [S]n (t)**;

**at (t > 0) and ( 0 < [S]n environment < "1" BODY (n) )**

*Here the condition is met that the "unit" degree of System organization ([S]n of the environment) is greater than "zero", but less than "one" of the LEADING degrees of Body's memory organization.*

*Energetic Entropy falls from "plus"-infinity to "zero", which, when assessing the scale of external Heterogeneities, means a "crushing" of the energy States of the Environment.*

Summarizing subparagraphs 5.2.1. and 5.2.2. The following generalization can be made:

***For a given moment in the circulation of the CYCLE-PROCESS, in the first case, there is an approximate description of the LAW OF CONTINUOUS GROWTH OF ENTROPY OF CLOSED SYSTEMS, in the second case, there is a simplified formula of the LAW OF DECREASE IN ENTROPY OF OPEN SYSTEMS.***

**5.2.3.** Next, let's return to the possibilities of Bodily PERCEPTION. The entropy values of the ITS "logarithmized" graphical function have boundaries from "plus" to "minus"-infinity. According to the LAW OF LIMITING DEVELOPMENT OF SYSTEMS, with a long period of existence of any System, the process of Bodily perception reaches an evolutionarily determined limit in the consumption of information and energy characteristics of the influencing Entropy. This limit awakens the next stage of bodily processing of the Uniformities and Orderliness of perceived Events, which may be called ASSOCIATIONS.

Assimilation of the perceived Entropy allows one to transform Its properties into more beneficial (for the Body) types of approximate reflection of Reality. This process occurs according to the principle of ASYMETRIC RE-REFLECTION of information and energy characteristics of the Entropy of external influences. It turns out that repeated independent modeling of the states of the External World takes place in the Body. The next formula may determine this moment of the CYCLE-PROCESS:

$$1) \text{ inf.H body} = - \text{EXP } [S]n (t);$$

$$\text{for } (t > 0) \text{ and } (0 < [S]n \text{ environment} < "1" \text{ BODY } (n) );$$

$$\text{LIM inf.H body } ( Sn(t) ) = \text{"minus"- infinity};$$

That is the information content of the energy characteristics of the Entropy perceived by the Body describes the effect of "Denial" of the uncertainties and heterogeneities of external influences.

"NEGATIVE" Entropy values characterize the natural state of System Bodies according to the REVERSE PRINCIPLE (with a minus sign)

SYMMETRICALLY ESSENTIALS OF REFLECTION of the states of their Environment.

$$2) \text{ enrg.H body} = - \text{EXP } [S]n (t);$$

$$\text{for } (t > 0) \text{ and } ( [S]n \text{ environment} > "1" \text{ BODIES}(n) );$$

$$\text{LIM enrg.H body } ( Sn(t) ) = "zero";$$

Therefore, there is a decrease in the energy losses of the Entropy perceived by the Body, which is used by It mainly to master the quantitative characteristics of the influences of the external Environment.

As the Body approaches the processes of reproduction, Its Energetic Entropy decreases from the "minus"-infinity of Its own "energy reserve" to almost "zero" (the efficiency of the Body tends to 100%). This stage of the general CYCLE-PROCESS is called the BODY's ASSOCIATION with the ENVIRONMENTAL EXTERNAL INFLUENCES.

**5.2.4.** The Body cannot exist without interactions with its Own Environment! Its "memory" created by the assimilated Information of specifically organized Energies influences the states of the external Environment. This is due to the fourth point of the "CIRCULATION" of the explained System. This is the stage of new Entropy PRODUCTION. ITS functions are Asymmetrical to the functions of Entropy CONSUMPTION. This Asymmetry manifests itself relative to the boundary of the "vertical" division of the space-time relationship of System Phenomena, which can be expressed as follows: (See Fig. 1).

$$1) \text{ inf.H envir.} = - \text{LOG } [S]n (t);$$

$$\text{at } ( |t| > 0 ) \text{ and } ( [S]n \text{ bodies} > 1 " \text{ ENVIRONMENT } (n-1) );$$

$$2) \text{ enrg.H envir.} = - \text{LOG } [S]n (t);$$

$$\text{at } ( |t| > 0 ) \text{ and } ( 0 < [S]n \text{ body} < "1" \text{ ENVIRONMENT } (n) );$$

Due to mathematical constructions, we again have an interesting situation: the "negative" lifetime of the System. This "nuance" does not mean that during REPRODUCTION Time goes backward. In other words, when making "Your contribution" to the "common cauldron" of the Environment, these processes

seem to flow in the opposite direction to the course of PERCEPTION processes. "NEGATIVE" values of the Information and Energy characteristics of System Entropy determine the degree of processed orderliness (information content) and heterogeneity (energy) of Events experienced by the Body.

**5.2.5.** Following the above-described model, let's conclude that the Environment's characteristics show Its "crazy" Losses and Disorder, and the characteristics of the Body show the same "crazy" growth in Its Energy Intensity and Information Content. Let us recall that this interpretation carries idealized absolute forms of Systemic interaction for a global understanding of the processes under discussion. Therefore, for a specific stage of the Evolution of Bodies, it turns out that the real System works only when using Its Entropy characteristics in the time intervals of the interdependent and non-destructive existence of the Body and the Environment.

**5.3.** Next, let's move to the definitions of "reliable" and "shaky" states of the SYSTEM under study.

Figure 1 shows that the graphs of Entropy characteristics have "intersection points". These "CROSSINGS" determine the boundary conditions of the SUSTAINABLE existence of the explained CYCLE-PROCESS.

Firstly, the problem of "STABILITY" will be explained. "IT" consists of maintaining a "balance" between the decrease in Energy Entropy (i.e., the increase of Energy Capacity) and, accordingly, the "asymmetrical" decrease in Its Information "face" (i.e., the increase of Information Content). These are present both in the processes of CONSUMPTION and PRODUCTION.

Let's consider the above in more detail. It is impossible to single out the processes of Absolute PERCEPTION or REPRODUCTION; this does not exist in Nature, otherwise, the "Death" of Its Objects would occur. Therefore, it can only judge the predominant role of ONE OF THEM. Thus, let us consider the described System of Body-Environment interactions concerning the flow of time that determines Its existence. Let the time of PERCEPTION processes flow from

“minus” infinity to “plus” infinity, where "negative" time values characterize the PAST of a given System, and "positive" ones characterize its FUTURE. During REPRODUCTION, on the contrary, from “plus”-infinity to “minus”-infinity, where “negative” values already determine the FUTURE, and “positive” - the PAST. Perceived Energies and Information always condition the fact of the Reproduction. The Reproduction process develops backward in time by the evolutionarily experienced System states.

Using the principle of structural symmetry of the Information and Energy Entropy values, as well as the functional asymmetry principle of their states relative to the directions of the time flow, it is possible to determine the conditions for the “workable” existence of any System.

***SUSTAINABILITY is determined by the INFORMATION-ENERGY BALANCE of the evolutionarily accessible VALUES of the system-encompassing ENTROPY of interactions between the Body and the Environment.***

***THE INSTABILITY OF THE SYSTEM IS CHARACTERIZED BY VIOLATION OF THIS BALANCE.***

The INSTABILITY is manifested in the deviation of the perceiving and reproducing Measure of the values of Energetic and Information Entropy covered by System processes. This leads to a change in the Limits of Entropy Acceptability of Information and Energy “units” of a STABLE System's state. That leads this System to Its “New Life” or “Death”.

***The SYSTEM “Death” occurs when the four-stage process of Its “Cycles” exceeds the maximum permissible values of the Evolutionarily accessible UNITS of Information Content or Energy Intensity of the processed Entropy.***

***The SYSTEM “new life” is determined by the potential deviations of the UNITS of Information and Energy Entropy, which is limited by moments of coincidence of “purely” energy-entropy or “purely” information-entropy cycles***

*of the System. (See Fig. 1) These deviations become a cause of either IMPROVEMENT ("Progress" /in Latin - forward movement/), or SIMPLIFICATION ("Regression" /in Latin - reverse movement/) of the System. (See Fig. 2).*

*REGRESS is carried out due to the action of the "Law of Increasing Entropy of Closed Systems" and the "Law of Limit Development of Systems"; and PROGRESS is based on the "Law of Reducing Entropy of Open Systems" and the "Law of Evolutionary Competition of Systems".*

The actions of THESE GLOBAL PROCESSES are determined by the sixth law of Memory Development of Nature Systems which is formulated as follows.

#### 7. LAW OF OBJECT'S MEMORY DEVELOPMENT

***SYSTEMATIC CRISES OF THE QUANTITATIVE MISBALANCE BETWEEN THE ENERGY-INFORMATIC ENTROPY OF IMPACTS COMING TO THE OBJECT and ITS INFO-ENERGETIC ABILITIES TO REFLECT THEM WITH ADEQUATE QUALITY LEAD THE OBJECT EITHER TO NEW TYPES OF ITS MEMORY, WHICH ABLE TO KEEP ITS EXISTENCE IN STABLE STATE, OR TO ITS TOTAL DEGRADATION AND DEATH!***

#### 6. "VIVID" and "DEAD" or the Main States of Nature [2]

The Principal Model of Memory identifies SEVEN TYPES of gradual organization of Vivid Memory using the example of a Human, which correspond to both large-scale generalized stages of Phylogenesis (i.e., Evolutionary improvement of vivid Organism) and Ontogenesis (individual growth of any Organism) [1].

Tying between the Phylogenesis and Ontogenesis explains the evolution of CERTAIN Memory TYPES in the Systemic "Circulation" model. There is a "straight line", meaning segments of Evolutionary-time PERIODS, during WHICH the formation of holistically stable TYPES of Memory took place. (See Fig. 1 and Fig. 2) The general movement of temporary "Cycles" of DIFFERENT

TYPE Evolution goes from less organized Systems to more highly organized ones. The entropy of the minimum degrees of the organization remains unknown for now and goes into the secret depths of the origin of Our Galaxy / in Greek. - milky (Milky Way System)/.

The principle of interrelations between the Environment and the Body with any degree of organization of Reflection processes remains the same, only the generalized "Units" of Information and Energy characteristics of the Entropy of System-encompassing interactions change.

The Process of natural evolution was defined as the RESOLUTION OF THE CRISIS BETWEEN the changing CONDITIONS of the Environment and the reorganization POTENTIALS of the Body located in It. THE CRISIS is being OVERCOMES THROUGH the emergence of NEW TYPES OF MEMORY.

In connection with THIS problem, at the current stage of people's development, there is a need to form NEW DEGREES OF ORGANIZATION OF THEIR MEMORY WHICH quite rarely manifest THEIR work in the practice of Our life. But THEIR mass development will determine the future fate of Earthly Civilization.

All the above discussions about the Evolution of Nature did not provide for its division into "VIVID" and "DEAD". From the distant Past of people, there is a debate about finding the "Boundaries" of the conceptual influence of "THESE" Concepts. It is difficult to remove the "invisibility cap" from this problem. Some scientists insist that "Its" mainline is drawn by the "Cell" of the simplest organisms, while others - by the primary structures of hydrocarbon compounds capable of "replication". The "fog" in this matter is serious, it is difficult to disperse "it"; for when two more "spiritualized" concepts such as "Life" and "Death" are connected to the understanding of what is being discussed, then the density of opinions becomes impenetrable.

A more or less clear division between VIVID and DEAD can be made only from the standpoint of the Evolutionary Model of the Reflex Organization of



Object Memory. It is not possible yet to determine the TIME POINT of transition from Dead forms of Nature to Vivid ones. A reasonable idea is to carry out this division according to the principle of the DOMINATING DIRECTION of the processes of Systemic interaction between the Body and the Environment.

THE PRINCIPLES OF DIVISION INTO VIVID AND DEAD are as follows:

***“DEAD” should include Bodies or Systems in which ANALYSIS PROCESSES play a DOMINANT ROLE and their inherent SYNTHESIS PROCESSES are aimed only at periodically maintaining Their stable existence in Time and Space;***

***the “VIVID” should include Bodies or Systems, which are more characterized by the DOMINANCE OF SYNTHESIZING PROCESSES of existence with the accompanying share of ANALYZING activity aimed mainly at reproducing their genus.***

**Conclusion.** The article introduces a groundbreaking model of nature development that empowers researchers to analyze extensive datasets more accurately, leading to a better understanding of the evolutionary-historical events in scientific investigations. It delves into the entropic interaction characteristics of the environment and the body, based on the interactions of energy and information. The model offers new insights into the "vivid" and "dead" states of nature, defined by the dominance of analysis or synthesis processes within systems. It addresses the systematic crises resulting from imbalances in energy-informatic entropy. Additionally, the article presents the entropy model of memory evolution and the principles of reflex development, shedding light on the systemic interaction of objects with the external entropy of the environment. These innovative concepts, laws, and principles provide a comprehensive framework for comprehending the intricate relationships between energy, information, and Entropy of natural systems, with high potential applications across various scientific disciplines.

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